



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

CB

SL

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
|-----------------|-------------|----------------------|---------------------|

09/497,865 02/04/00 CHANG

D PD-980034

020991 PM82/0316
HUGHES ELECTRONICS CORPORATION
PATENT DOCKET ADMINISTRATION
BLDG 001 M/S A109
P O BOX 956
EL SEGUNDO CA 90245-0956

EXAMINER

ISSING, G
ART UNIT PAPER NUMBER

3662
DATE MAILED:

03/16/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/497,865

Applicant(s)

CHANG ET AL.

Examiner

Gregory C. Issing

Art Unit

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

Art Unit: 3662

1. The disclosure is objected to because of the following informalities: the title, specifications and claims consistently misspell "equatorial" as "equitotrial". On pages 6, line 25 and 7, lines 11 and 25, the specification incorrectly illustrates Figs. 1 and 2. On page 14, neither of the terms "emphameire" nor "hadema code" is a recognized term in the art. An electronic search on "Wiley Encyclopedia of Electrical and Electronics Engineering", "IEEEExplore", and the PTO database "EAST including Derwent" produced no search hits.

Appropriate correction is required.

2. The drawings are objected to because in Figure 4, the numbered representations 1-8, 34 and 36 are not clearly defined in the specification as to what they represent. Correction is required.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 4-11 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al in view of Chang et al and Barrett et al.

Miura et al teach a mobile satellite terminal utilizing a digital beam forming, self-beam steering scheme wherein the beamforming involves the use of a multibeam former utilizing FFT techniques. Miura shows a known configuration of the antenna/beamforming in Figures 2 and 8 but fails to show the use of the multiplexor circuit. Additionally, Miura et al show a planar patch of antennas and thus fails to show the cross-slotted waveguides scanned mechanically in azimuth and electronically in elevation. Chang et al teach the utilization of a multiplexing scheme in

Art Unit: 3662

order to minimize the number of A/D converters, see Figure 2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Miura et al by substituting the multiplexing scheme of Chang et al in the antenna configuration of Miura et al in order to reduce the number of components necessary, thereby reducing the size and cost of the antenna configuration further resulting in a lower profile design. Barrett et al teach the use of an antenna array for use in satellite communications comprising rows of cross-slotted waveguides for use on a rooftop of a vehicle wherein it is suggested that a combination of mechanical scanning in the azimuth direction and electronic scanning in the elevation direction can reduce the complexity and height of the tracking mechanism and thereby provide a low profile antenna structure. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Miura et al by substituting a plurality of cross-slotted waveguides as the antenna elements and provide electronic scanning in the elevation direction and mechanical scanning in the azimuth direction to provide a desired low profile antenna structure for a satellite communication terminal as taught by Barrett et al.

5. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al in view of Chang et al and Barrett et al as applied to claims 1 and 11 above, and further in view of Ajioka.

The previously combined references fail to show the use of the claimed septum in the waveguides. Ajioka teach the conventionality of the slotted septum in the waveguide to provide dual polarization control. It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Miura et al in view of Chang et al and Barrett

Art Unit: 3662

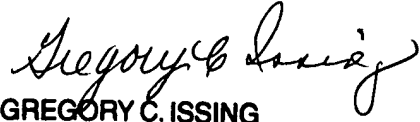
et al by incorporating the slotted septum in the waveguides to provide the desired control of the polarization of the transmitted/received signals in view of the teachings of Ajioka.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Suzuki et al disclose a mobile satellite communication terminal which utilizes digital beam forming in order to direct a received communication in the direction of the source of the communication, see Figure 5. Sato et al disclose a phased array antenna for a mobile satellite terminal which combines the received signals, digitizes the combined signal and processes the resulting digital signal to control the direction of the antenna, see Figs. 1-3. Sakakibara et al disclose a mobile satellite communication terminal which combines mechanical scanning in the azimuth direction and electronic scanning in the elevation direction using a cross-slotted leaky waveguide array, see Fig. 1. Higashi et al disclose a array antenna for use on a mobile satellite communication terminal which provides electronic scanning in the elevation direction and mechanical scanning in the azimuth direction, see Fig. 13.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is (703)-306-4156. The examiner can normally be reached on Mon-Thurs 6:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (703)-306-4171. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-305-7687 for regular communications and (703) 305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.


GREGORY C. ISSING
PRIMARY EXAMINER
3/14/01